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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,659	02/04/2005	Christopher N. Bowman	76775.011307	1198

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GREENBERG TRAURIG, LLP  
1200 SEVENTEENTH STREET, SUITE 2400  
DENVER, CO 80202

EXAMINER
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BERMAN, SUSAN W

ART UNIT	PAPER NUMBER
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1711

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/19/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/523,659

**Applicant(s)**

BOWMAN ET AL.

**Examiner**

Susan W. Berman

**Art Unit**

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,9-11,20 and 21 is/are rejected.
- 7) ☒ Claim(s) 4-8,12-19 and 22-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____                                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/05</u> .   | 6) <input type="checkbox"/> Other: ____                           |

***Claim Objections***

Claims 4-8, 12-19 and 22-24 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim. See MPEP § 608.01(n). Claims 3 and 11 are multiple dependent claims. Accordingly, the claims have not been further treated on the merits.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Lutz et al (4,816,497). Lutz et al disclose infusible preceramic silazane polymers obtained via UV radiation. Mixtures of vinyl- or allyl-containing preceramic silazane polymers, mercapto compounds and photoinitiators are exposed to UV radiation and then pyrolyzed. The silazane polymers disclosed include low molecular weight monomers (columns 5-8).

***Claim Rejections - 35 USC § 103(a)***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liew et al, in the article "Fabrication of SiCN MEMS by Photopolymerization of Pre-Ceramic Polymer" in view of Lutz et al '497. Liew et al disclose photolithographic patterning of a pre-ceramic polymer comprising adding and curing successive layers of liquid polymer followed by pyrolyzing the resulting polymer structures to form a multi-layered ceramic MEMS. The starting material is a liquid polysilazane precursor. Liew et al do not teach including a mercapto-functional compound in the precursor composition. Lutz et al teach mixtures of vinyl- or allyl-containing preceramic silazane polymers, mercapto compounds and photoinitiators that crosslink when exposed to UV radiation.

It would have been obvious to one skilled in the art at the time of the invention to employ the compositions taught by Lutz et al in the method of fabrication taught by Liew et al. Liew et al provide motivation by teaching liquid polysilazane precursors that are photopolymerizable in the presence of a photoinitiator are suitable in the disclosed method. Lutz et al provide motivation by teaching compositions comprising analogous preceramic silazanes and photoinitiators and that addition of mercapto compounds renders the compositions infusible prior to pyrolysis. One of ordinary skill at the time of the invention would have been motivated by a reasonable expectation of successfully obtaining useful SiCN MEMS by photopolymerization of a pre-ceramic precursor composition as taught by Lutz et al using the method taught by Liew et al.

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***Conclusion***


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,228,437; US6,284,072; and US 6,117,612.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan W. Berman whose telephone number is 571 272 1067. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SB  
3/8/07

  
Susan W Berman  
Primary Examiner  
Art Unit 1711